Claims:

1.   Method for verifying a device under test, comprising:

        generating a packet descriptor,

        assigning a unique packet identifier to said packet descriptor,

        generating a packet corresponding to said packet descriptor, said packet having the unique packet identifier of said packet descriptor,

        transmitting said packet to the device for processing by the device,

        identifying said processed packet based on said unique packet identifier, and

        comparing said processed packet with said generated packet having the same unique packet identifier to verify the device under test.

2.   The method of claim 1, wherein generating a packet descriptor includes retrieving from a packet database a packet descriptor specified by a packet description language.

3.   The method of claim 2, further including storing the unique packet identifier in a packet identifier database, wherein said packet descriptor can be retrieved from the packet database based on said unique packet identifier.

4.   The method of claim 1, wherein said unique packet identifier is a frame sequence number.

5.   The method of claim 1, wherein comparing said processed packet includes obtaining a copy of the packet descriptor having said unique packet identifier, expanding said copy into a regenerated packet, and comparing said processed packet with said regenerated packet.

6.   The method of claim 1, wherein comparing said processed packet includes obtaining a copy of the packet descriptor having said unique packet identifier, modifying said obtained copy of the packet descriptor, generating a regenerated packet from said modified copy, and comparing said processed packet with said regenerated packet.

7.   The method of claim 1, wherein generating a packet descriptor includes retrieving from a packet database a generalized packet descriptor adapted for a plurality of packet transmission protocols and retaining in the packet descriptor only those elements from the generalized packet descriptor that correspond to a desired packet transmission protocol.

8.   The method of claim 1, further including forming a queue of packet descriptors, each packet descriptor having the corresponding unique packet identifier, wherein a sequence of packets corresponding to the packet descriptor queue is transmitted to the device.

9.   The method of claim 1, further including

forming from a plurality of packet descriptors a flow representing a transmission rate of the packet descriptors, each flow having a unique flow identifier,

combining a plurality of the flows into a port queue, and

transmitting packets corresponding to the port queue to the device for processing by the device.

10.   The method of claim 9, wherein combining includes one of aggregating and merging.

11.   The method of claim 9, wherein the processed flows are de-multiplexed based on the unique flow identifier, before the processed packets are identified.

12.   The method of claim 10, further including analyzing the de-multiplexed flows to provide a statistics of the flows.

13.   The method of claim 1, wherein the device under test is a network device selected from the group consisting of switches and routers.

14.   A system for verification of a device under test, comprising:

a packet database comprising packet descriptors, each packet descriptor having a unique packet identifier,

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a transmit transactor coupled to the device and receiving said packet descriptor, said transmit transactor building from the packet descriptor a packet byte stream to be transmitted to the device for processing,

a receive transactor receiving from the device the processed byte stream and identifying the received packets based on the unique packet identifier, and

a packet checker comparing said identified packet with a packet expanded from a corresponding packet descriptor in the packet database having the same unique packet identifier.

15.   The system of claim 14, further comprising a packet identifier database that stores said unique packet identifier, wherein said packet descriptor can be retrieved from the packet database based on said unique packet identifier.

16.   The system of claim 14, wherein said unique packet identifier is a frame sequence number.

17.   The system of claim 14, further comprising a packet descriptor builder that builds a queue of packet descriptors, each packet descriptor having the unique packet identifier, wherein a sequence of packets corresponding to the packet descriptor queue is transmitted to the device.

18.   A computer program product for verifying a device under test, comprising:

computer executable code for generating a packet descriptor and assigning a unique packet identifier to said packet descriptor,

computer executable code for generating a packet corresponding to said packet descriptor, said packet having the unique packet identifier of said packet descriptor,

computer executable code for transmitting said packet to the device under test for processing by the device under test, and

computer executable code for identifying said processed packet based on said unique packet identifier and comparing said processed packet with said generated packet having the same unique packet identifier to verify the device under test.